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ECOLOGICAL PROBLEMS IN LEBANESE WATER SECTOR AND THEIR SOLUTION

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Annotation: the environment in Lebanon requires much attention to water sector. There are a lot of problems: surface and underground water pollution, wastewater, bad agricultural methods of fertilizing, burglary operations with water, salinization of water, random well drilling, high levels of heavy metals in marine waters. And only one solution: coordination between institutions and government with bodies associated with water sector to implement the water strategies (at least the national water strategy of Lebanon) and rules which include fighting water pollution events, mechanism of applying financial water guidelines to mitigate the chaotic and irresponsible use of water.

Key words: water, pollution, wastewater, problem, ecological, strategy, Lebanon

The environmental scene in Lebanon is getting worse. The underground or above has been exposed to the most dangerous diseases of the time, i.e. pollution (in varying proportions according to regions and locations): air pollution, pollution of ground and surface water, soil pollution – all these lead to bad quality of agricultural products of all kinds ... and the reasons of pollution: solid and liquid tons of waste, wastewater, pesticides and fertilizers, industrial wastes and emissions, carbon dioxide emissions from the mechanisms. This is the ecological situation in Lebanon in the aspect of the basic elements of human life, that is air, water and soil. In terms of deterioration of nature, quarries and crushers that distort mountains and green nature, fires, random urban expansion ... and other reasons lead to a bundle of pollutants that harm humans and the homeland. All these mentioned problems intentionally and unintentionally are caused by people, lack of regulation and strict environmental laws.

What it is concerned the water sector we can say that in the Lebanese scene is a coastline: beaches of waste on the beach, wastewater mixed with seawater, floating waste; a dense layer of air pollution, and a frightening incidence of cancer in the villages on the Litani River.

The water sector in Lebanon in general, and the Litani waters in particular face real, devastating problems that, if they continue, may lead to the waste of this rare national wealth being and make it distorted, distorted, and rendered unusable.

In this context, we must ask whether Lebanon is still, in relation to its surroundings, a “water palace”, or is its water, like the rest of its natural resources, flowing outside the borders or most of it towards the sea and the remaining are polluted and harmful.

The water sector prevails in Lebanon in a state of instability and chaos, which is represented by the absence of the supervising administration in the sector and the absence of laws that protect this national wealth (from sources to distributions to beneficiaries). More than fifty years ago, burglary operations were launched on the surface and groundwater represented by the indiscriminate exploitation of water – this attack mainly affected the groundwater that can be delivered from the seashore to the level of 240 meters and to Bekaa Valley, especially in the upper basin of the Litani River.

This unfair random exploitation of the underground reservoir resulted in depletion of its water, and the process had devastating negative effects, the most important of which are:

– the water level in the wells decreased by 60 to 100 m, which led directly to the disruption and shutdown of thousands of pumping stations along the coast, especially in Beirut and the Bekaa;

– the emergence of a problem of salinization of water, or what is known as intrusion phenomena, is the result of an imbalance between the sea level and the water level in the coastal aquifer, as sea water leaked into it after 3 to 4 years have passed in recent successive periods. The salinization of aquifer water outweighs the risk of contamination due to the difficulty of treatment and severe damage of water users;

– the random well drilling resulted in the depletion of most of the springs that were dug in its campus, dozens of wells, although the law defines a buffer zone to protect the spring. This happened in the Al-Alaq Spring (the main source of the Litani River) and in the Al-Hamam Spring in Marj Al-Khayyam. These two abundant fountains have run out after scores of underground wells have been drilled on their campus.

Surface water was not escaped from this burglary, as it blatantly attacked rivers and springs, and burglary appears blatantly at the level of water distribution networks.

In this regard, we can say that:

– more than 60% of the drinking water meters located at the entrances to the houses were destroyed and disabled, and rarely carried out a punishment for a participant who violated his meter in broad daylight;

– all the concentrations focused on the irrigation water intakes in the Southern Bekaa project and other projects have been suspended or stolen by the subscribers with the water.

Lebanese waters (surface and groundwater) are exposed to all types of chemical and biological pollution, as a result of diverting wastewater and solid waste and all pollutants released by agricultural production in general towards water sources.

On the level of sanitation, we can say that the majority of coastal cities and villages overlooking the sea are diverting their sanitary drainage towards the sea, and there are limited attempts for treatment that were recently made by some municipalities of coastal cities, but they do not work regularly. Meanwhile, residents of inner cities and towns relied on releasing the contents of their sewers and throwing their solid waste in valleys or river basins so that their pollutants would settle in the sea at the onset of winter.

As for the residents of the Bekaa living in the upper Litani basin, they called the river “the Sea” of the Bekaa, and the municipalities on its banks took it as a major cesspit into which they dump their sewers and throw solid waste in its basin.

Although the pollution of the Litani River and Lake Qaraoun continues to accumulate and worsen for several decades, the pollution created a few years ago to this day, in the southern part of the Litani River, especially its color change to orange sometimes, and to dark green and dark gray at other times, has caused a national crisis. Comprehensively, it is very urgent to put the problem of the rooted and dangerous pollution of the Litani River “from its source to its destination” and Lake Qaraoun on the agenda of the government, municipalities, civil society, media, deputies and ministers, the judiciary and institutions of the entire Lebanese society.

Much money has been allocated to accomplish this task of tackling pollution, which has jumped to become a priority in the country despite the crushing and competing crises.

Some Lebanese towns and villages have a high incidence of cancer compared to the overall incidence of cancer in Lebanon and in the world as a whole. Australia is the first country in the world to have cancer, with a rate of 468 cases per 100 000

people. Lebanon ranks 48th in the world, with a rate of 242.8 injuries for 100 000 people. When comparing these rates with cancer rates in some Lebanese towns located in the upper basin of the Litani River, the wide difference appears between the rates that are twice the global average. In the town of Bar Elias with a population of 12 185 people, 600 cases of cancer are recorded, while in the town of Hosh al-Arfaqah, with a population of 1704 people, there are 60 cases of cancer, and in the town of Tamnin al-Tahta with a population of 3863 people there are 40 cases of cancer (in addition to high rates recorded in the villages of Qaraoun, Al-Marj, Al-Mansoura, Gaza, Hosh Al-Hirma, Al-Rawda, Al-Dalhamiyah and Forzol). Hospital cases of cancer patient s are treated at the expense of the Ministry of Health in Lebanon.

As informed by the State of the Environment report by The World Bank, high levels of heavy metals appear in marine waters adjacent to industrial plants, including arsenic, lead, zinc and chromium. The highest percentages of these heavy metals were found near the industrial cycle complex, mainly due to the large tannery found there. Chrome proportions may have decreased since a large number of tanneries have been closed. Not much has been achieved so far with regard to the treatment of industrial wastewater before it is discharged into waterways, rivers and the sea [1].

Coastal marine waters in Lebanon receive large quantities of untreated wastewater as a result of the presence of 53 large marine sewage effluents along the Lebanese coast (the State of the Environment Report announced the number of sewage estuaries in 2001 and this number has not been updated yet). It is spread along the beach along 240 km, 16 of which are in Beirut area. Coastal marine waters receive approximately 162 million cubic meters per year of untreated wastewater (equivalent to 276 000 million cubic meters per day), equivalent to 65% of the total waste water in Lebanon, and 70% of the population contribute to Lebanon, in addition to thousands of tourists annually who produce these increased quantities of wastewater.

Lebanon has made good progress in establishing wastewater treatment plants along the shore, which, in addition to untreated wastewater from cities and villages, remain offshore marine waters affected by the large solid waste dump on the sea in Tripoli that is still operating.

A number of universities work in the field of water research, most notably the American University of Beirut (the Water Research Center), the Lady of Louaizeh University (the Center for Hydroelectric Energy and the Environment) and Saint Joseph University (the Regional Center for Water and the Environment) work with water problems and publish a large part of the valuable data. In addition to research and data, universities offer water resources and the environment as a basic subject in their curricula.

Based on the prevailing challenges, however, the following recommendation may be suggested:

– awareness and advice of higher use of water should be added to consumer;

– strategies(i.e. The national water strategy of Lebanon) and rules need to be adopted. Promoting opportunity water assets with a special emphasis on water

harvesting and the usage of non-conventional water sources are very urgent;

– coordination between different institutions and government with bodies associated of water sector;

– adopting systematic water pleasant investigation on the main water and fighting water pollution, appreciably in floor water are very important;

– applying financial water guidelines to mitigate the chaotic and irresponsible use of water;

– adaptation of instruments needs to be implemented for the converting weather conditions and its effect on water assets.

There is a talk in Lebanon for more than 20 years about practical solutions to confront the pollution catastrophe and plans are being made to deal with pollution and water problems. Millions of dollars have been allocated from governmental and international assistance to implement the construction of treatment plants and sewage networks, but the state and other institutions affiliated with it prevent the implementation of these plans.

We believe that only the municipalities are able to implement these plans, provided that the financial capabilities and human equipment necessary for them are put at their disposal.

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НАПРАВЛЕНИЯ ПОВЫШЕНИЯ КОНКУРЕНТОСПОСОБНОСТИ РЕСПУБЛИКИ БЕЛАРУСЬ В РАМКАХ ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА

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Аннотация: В статье анализируется состояние национальной конкурентоспособности, проблемы и направления ее повышения на примере стран Евразийского экономического союза. На основе динамики глобального индекса конкурентоспособности, а также других индексов и субиндексов, определяется место стран союза в мировых рейтингах. Выявляются факторы, влияющие на изменение конкурентной позиции Республики Беларусь, которые связаны с высоким уровнем государственной собственности в экономике страны, недостаточной степенью развития финансового рынка и высокой налоговой нагрузкой. Определены рекомендации по снижению воздействия негативных факторов на конкурентоспособность Республики Беларусь.

Ключевые слова: глобализация, конкурентоспособность, глобальный индекс конкурентоспособности, межгосударственное объединение,